Why Manage Pavement Maintenance?

Back in the "good old days" when there was "enough" money - not a surplus, but enough - putting together a pavement maintenance budget was easy. Four or five criteria for setting a budget and deciding how funds would be spent seemed to satisfy everyone.

Routine Maintenance. Many agencies established routine maintenance cycles such as crack sealing every year, seal coating every fourth year, and so forth. Pavements ready for the four-year seal coat were budgeted, and the line items for crack sealing and patching were increased by the inflation rate over the prior year. "**Worst First**". Major maintenance was prioritized on a "worst first" basis. Those pavements that looked bad got attention. This component of the pavement maintenance program seemed logical to citizens, the press and elected officials. **Citizen Complaint**. The "worst first" or routine maintenance program elements could always be adjusted to accommodate work requirements stemming from citizen complaints or accident experience. **Political Priority**. The program could also be adjusted to by the political process, which in fact was a legitimate expression of citizen complaints. **The Old Superintendent**. Finally, there were the recommendations from "old" who had been around for ages and knew the pavements even better than he knew his children.

These approaches worked well and often became entrenched as standard operating procedures.

Today, however, things have changed money is tighter and the competition for limited financial resources is intense. Elected officials, citizens and the press question budgets line-by- line and expect detailed justifications for every item. They are also quick to ask for impact, cost and performance data on alternative maintenance techniques and strategies.

On average, funds are available to accomplish only one third to half of the overlays that our maintenance standards indicate are necessary. Which ones should we do? Should we try thinner overlays? What would be the impact of deferring crack filling this year? Could we get by with patching this street or that for another year? What will it cost if we push a few rehabilitation projects back a year or two? What would be the impact of a 5%, 10% or 15% reduction in personnel?

Agencies with Pavement Management Systems (PMS's) have consistently found that they are able to optimize their available funds. These agencies literally get more work done with their limited funds while improving the overall condition of their pavement networks.

Orange County, CA instituted a PMS in 1984, since then: The percentage of pavements rated in good condition has gone from 50% to 78% The percentage of pavements rated in poor condition has gone from 24% to 5% Annual expenditures on roadway maintenance have decreased in constant dollars by 30% The number of maintenance personnel has decreased by 33% Despite funding and personnel reductions Orange County has improved the quality of its pavements

The **Michigan Department of Transportation** documented pavement maintenance savings of $6 for every $1 spent on a preventive maintenance oriented PMS Studies have shown ratios of total annual costs between managed and unmanaged pavement networks of 1:3½, 1:4 and 1:5

Program Elements

Pavement Management with Micro PAVER is now available as an educational packaged program. A one-day live program is captured on two videotapes which center on pavement management with Micro PAVER. This training program is a step by step approach from initiation through network and project level management functions. While the program was produced using an earlier version of MicroPaver, the basic elements are the same and will benefit the new user.

Micro PAVER sets the stage for the next generation of public works management tools. CERL, working with its sponsors and under cooperative agreements with APWA, will continue to work towards development of a public works desktop plug-and-play components to support facets of M&R planning and prioritization.

Micro PAVER includes:

Micro Paver Software with on-line users manual
Two training videotapes (developed using a previous version of MicroPaver)
Micro PAVER Training Manual (contained within the CD for immediate reference)
Text: Pavement Management for Airports, Roads and Parking Lots by M.Y. Shahin
Distress Evaluation Manuals
Asphalt Surfaces
Concrete Surfaces
Unpaved Surfaces
One year of Helpline service
Copies of all software and manual updates issued for one year
Opportunity to annually reveiew your "enhancement/service agreement" to continue receiving Helpline service and software/manual updates

Micro PAVER has gone through almost a dozen versions since V1.0 was introduced. A few of these versions standout as special: Version 3.0 was the first version to introduce a new way of calculating PCI Version 3.2 was created as the ultimate DOS based version and it was designed to serve users for however long it took them to convert their computer systems to Windows. Version 4.2 was developed in anticipation of the expanded capabilities of the next generation of

Microsoft programs and featured improvements in the conditional analysis and inspection scheduling as well as data verification tools.

Micro PAVER 5.0 has numerous improvements over its predecessor. The following list will outline many of the important improvements made to the program.

The first area where improvements have been made is in the Tables area on the menu bar. Note that these system tables are used by all databases regardless of what database is online.

Tables

Define User Fields -> Additional User Fields: Allows the user to define user-specific fields. M&R Plan Tables -

> Major M&R: Tab 5 is a Priority Table that is a function of branch use and section rank. Tabs 3 and 4 can define branch use priority and section rank priority, respectively.

Condition Tools ->

Define Condition And Age Categories: This allows the user to define ranges for conditions and ages to be used in all reports including summary charts and condition analysis.

Select Condition Types: The user can select conditions that will be shown throughout Paver, i.e. summary charts, condition analysis, etc. Define User Distress Indices: The user can define any distress index for any selected groups of pavements. It is important to calculate the index for all sections—this can be a long process, that may take up to an hour.

The second area where improvements can be seen is the Visual Menu button on the Paver toolbar. The Visual Menu options are used when dealing with specific databases. We will highlight several of the improvements made to this area of Paver.

Visual Menu

Selectors: The user can use various selector functions. The combination of Tree and GIS is what is used in the Selection button on the Paver toolbar. Making a selection using any of the tools will be reflected throughout the system. The selection tools serve as a broadcast system.

Inventory

Copy and Move Data: Allows the user to move work history and inspection data among inventory items.

Inspection

All Conditions and Assignments: Allows user to view the condition and family assignment for any given section. This function is also available as a new tab on the

Inventory\Sections tab.

Reports: There are two new options for reports. **Flexible Report**: Allows the user to select what columns are to be used in the report. Select Create New Report to select what columns are to be included in the report. To choose the columns, highlight the table from the tree with the desired columns. Thenselect the desired column from the left-hand-side window and move it to the right-hand-side window.

GIS Reports: These provide inventory and PCI data reports. **Analysis Report**: Part of the output includes GIS views.

M&R Plan: On the Plan Mode tab, the user can select either Determine Budget Consequence (identical to v4.2) or Determine Budget Requirements (new feature).

The budget requirement feature allows the user to eliminate backlog in the number of years specified for the plan. The number of years is specified under the Timing tab. This is used by clicking the Backlog elimination in X years option. The budget requirement feature can also determine the budget required to maintain the current PCI or achieve a desirable PCI in the number of years for the plan. This is used by clicking the Condition Stabilization option.

Policies and Costs

The user has the option to apply localized policies in the first year as in v4.2 of Paver Or you can simply use M&R cost by condition for all years (new). The user may select the major M&R start year and when the user selects a date for major M&R later than the plan start year, you can also select to show the backlog during the time as well. This feature is useful in determining the consequence of no major M&R for a specified time period.

There are also many reporting improvements located throughout the system. Some final things to note: For added convenience, Paver allows the docking of windows. This can be accomplished by right clicking the diamond icon on the window desired to be docked. Another added feature is located on the PCI Inspection form. When you right click on a distress, you are taken to the distress manual and a description of the distress along with images.

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